Undercabinet Lighting OPTIONS

While fluorescent strips provide efficient and affordable lighting, halogen and xenon fixtures offer greater control

by Bob Thornburg

I'm always amazed at how people will spend tens of thousands of dollars on fine cabinetry in a high-end kitchen, then automatically slap a few cheap fluorescent fixtures with cool white lamps under the upper cabinets. With today's technology and the availability of lamps like halogen, xenon, and tri-phosphor fluorescent, we shouldn't have to settle for the greenish flickering light that has been the trademark of undercabinet lighting since our parents were babies. Here are a few of the more popular types of fixtures, along with some advantages and disadvantages of each type.

Fluorescent Strips

These have been the standard of the industry for many years. I suppose the main reason is that until recently they were all we had. Of course, standards aren't usually established unless they have some redeeming qualities, and these old workhorses do have their place. First, they are inexpensive. You can pick them up at the local home supply for just a few dollars, and they come in a variety of lengths. They do provide a lot of light, and good, even coverage. The lamps last forever; I have one in my house that has been working for at least 15 years. You can get a variety of lamps in the T12 size, including "daylight" (full spectrum), deluxe cool white, warm white, and natural, to name just a few. This can be a real advantage when you are trying to make the light output from all of the fixtures in the room look the same. And if you want to show off your fine china, the color-rendering index (CRI) of some of these lamps is excellent. Just be aware that fancy lamps for some T12 fixtures might cost more than the fixtures themselves.

Long the workhorses of undercabinet lighting, T12 fluorescent strips are economical and provide plenty of light.

So what's wrong with them? Well, for starters, they are big. It takes a pretty good reveal on your cabinet to hide them. The designation T12 means 12/8 inch. Therefore, the lamp itself is 1 1/2 inches in diameter. When you add the hardware required to support the lamp, you have a fixture that's close to 2 inches high and 3 to 6 inches wide. And yes, they can flicker and hum, though that seems to depend on the individual fixture. I have seen T12 fluorescents that were quiet and flicker free and others that would drive you to drink. If you can find one that's equipped with an electronic ballast instead of the standard magnetic ballast, it won't hum and flicker, but you will pay substantially more.

Though dimming undercabinet lights can enhance the overall kitchen lighting design, it's not a practical option with undercabinet fluorescents unless you use very expensive ballasts and properly matched dimmers.

Fluorescent Fixtures With T5 Lamps

Just as T12 means 12/8 inch, T5 means 5/8 inch, so these lamps, and therefore the fixtures, are much smaller. The T5 units provide many of the same benefits as the larger fluorescent fixtures — long lamp life, even coverage, cool operating temperature, and variety of light color. The reduction in size does not come without its own set of problems, however. Being a fluorescent lamp, it still needs a transformer. The transformer takes up space inside the housing, and there is not much space to spare in the little fixtures. Stuffing all the wires in the wiring compartment and getting the cover to fit snugly is no easy feat. And if you ever need to wire two or more of them together, you're really in trouble because you've got two sets of wires to deal with in that tiny compartment.

Halogen Bars

Halogen bars are sleek, compact units that generally hold from one to three 20-watt halogen lamps and can easily be hidden behind a 1-inch cabinet valence. The transformers are built in, and most units come with lamps installed. The lamps can sometimes be a pain to replace, but since the average life is 2,500 hours, you shouldn't have to worry about that too often. A word of caution about the lamps: When you do replace them, don't touch the lamp with your bare fingers. Supposedly, the oil on your fingers will stick to the glass and cause the lamp to fail prematurely. I've never tested this rule; I just do as I'm told.

Halogen lighting can be dimmed with standard dimmers, which means they can also be used for accent lighting. If the general ambient lighting in your kitchen is halogen, you might want to use these under the cabinets to keep the lighting color-balanced. It's a nice white light that can be used to accent a display as well as provide a bright working space.

The first time I used halogen bars I was quite impressed by how easy they were to install. Then I pushed my luck and attempted to connect two of them end to end for a continuous run. The connecting nipples were small, and the wiring compartments were smaller. It was a frustrating experience, but looking back, I realize that it was probably no worse than making up wires in any other kind of tiny undercabinet fixture.

Halogen is a good light source, but it does have one drawback — it gets hot. If you reach under a cabinet and touch the lens of a halogen fixture that has been on for a while, I guarantee you will pull your hand back fast. And it will probably have a blister on it. The owners of a home where my crew installed halogen undercabinet lights affectionately referred to them as "plate warmers." That's because the heat from the fixtures actually trans-

Fluorescent strips are available in slimmer models that accept T8, T5, and even T4 tubes. The unit shown here has an electronic ballast for quiet, flicker-free operation.

Halogen and xenon bars with built-in transformers are available in a variety of lengths. The unit shown here comes with a high-low switch and can be dimmed with a standard dimmer.

mitted through the cabinet bottom and made the dishes warm. We had to install dimmers to reduce the heat output rather than the light output. Some halogen fixtures come with dual-level switches, for high and low light output.

Xenon Bars

If you like the features of halogen undercabinet fixtures, you'll really like xenon fixtures. They have all the qualities of halogen, but they don't burn quite as hot. The color temperature of the light is a little warmer than halogen but not as warm as regular incandescent. But the real advantage is lamp life. Some of these miniature lamps are rated at around 20,000 hours. If you figure that the average undercabinet fixture might be used 30 to 60 minutes a day, that's about 50 years before you'll have to change a light bulb. Your biggest problem might be trying to remember where your spare light bulbs are. Unlike halogen, you can handle xenon lamps with your fingers and not worry about shortening their life.

Puck Lights

If you have just a small cabinet to light, you can't beat puck lights. They are so called because they resemble hockey pucks. And, amazingly, one 3-inch-diameter puck with a 20-watt lamp provides the equivalent light output of a 2-foot fluorescent fixture. They produce so much light that I've been using them successfully to illuminate small clothes closets. You can usually find them at your local home supply in blister packs of two or three fixtures and one plug-in transformer. If the customer doesn't want to see the wire snaking up the wall, they're easy to hard-wire. If you need more than three of them, it's more economical to use a halogen bar with the transformers built in.

Low-Voltage Tape

This is certainly the most flexible and easily installed of all undercabinet fixture types. It is actually a bunch of tiny porcelain sockets attached to a flexible ribbon or tape. The sockets come in spacings from 2 to 6 inches and will accept incandescent, halogen, or xenon lamps. Some tapes have an adhesive backing, so you can just peel off the protective strip and stick the tape under your cabinet valence. Personally, I have never trusted the adhesive; I figure it is bound to fail sooner or later, so I always use mounting clips. The one thing you cannot do is drive a nail through the center of the tape. The conductors are flat strips of copper folded into the tape, and if you stick a nail or screw through them, you will short out the whole system.

Tape light systems provide a smooth, even coverage, especially if the lamps are spaced close together. They are ideal if you have long runs and want uninterrupted coverage. And, they are definitely low profile. The tape takes up no space at all, so the height of the fixture is determined only by the size of the lamp you use.

However, being low-voltage fixtures, they require a transformer, and you have to find a place to install it. It's usually not too much of a problem in a kitchen, as you can probably commandeer a small section of cabinet to stash it in.

Before xenon lamps came on the scene, the low-voltage tape was not quite so attractive. Once lamps started to burn out, replacing them became a constant chore. Actually, once incandescent lamps start to burn out in a multi-lamp system, it's usually best to replace them all at once. But with xenon lamps, you and I won't be the ones who worry about it — it will be our kids and grandkids.

One 3-inch-diameter puck light with a 20-watt lamp will provide the same light as a 2-foot fluorescent.

Low-Voltage Rigid Strips

Similar to the low-voltage tapes, these strips hold many small low-voltage lamps in a linear configuration. They are not as flexible as tape, but their light coverage is a little more seamless. This is because they use festoon-type lamps — the ones that look like little glass fuses with metal caps on each end. The lamps are generally spaced close together, leaving few gaps in the lighting. They come in incandescent for warm color, halogen for brilliant white light, and xenon for super long life. You can also get little bi-pin adapters so that you can install MR11 halogen spots on the system. You might do this if you have a special item under the cabinet that you want to show off.

An aluminum L-channel is available to mount the strips in, and as long as I have the room, I always use it. I feel that it gives the lamps extra protection from physical damage, and it helps to keep the heat off the cabinet. As with any low-voltage fixture, these strips require a remote transformer and a place to hide it.

Low-Voltage Mini-Tracks

These devices look and act just like the lighting track that you would install on your ceiling, only they are tiny. You have little fixture heads that can be snapped in anywhere along the track. Some heads are nothing more than a mini-lamp holder and a bare bulb. If you plug in enough of these, you will get the same even coverage that you get with tape or strip lighting. Of course, being low voltage, they require a transformer.

Low-voltage mini-tracks require a separate transformer but allow you to place the lamp exactly where you need the light.

Mini-tracks work fine as kitchen undercabinet fixtures, but they really shine inside fine china cabinets, where you might want to use different fixture heads and lamps to provide even illumination while highlighting special objects.

Line-Voltage Track

Several companies make a line-voltage track that is about the same size as regular overhead track lighting but is made to fit under cabinets. The heads that plug in are little sockets that accept a candelabra-base bulb — basically, an old-fashioned Christmas tree bulb. Being incandescent lamps, they provide a warm color of light, and if spaced close together, they also provide good coverage. The lamps have a short life span, but they are also easy to get — you can usually find them on the shelf of your local supermarket. That can be a real plus, since some of the lamps I've mentioned have to be purchased at an electrical supply outlet or a specialty lighting store.

Transformers

Many low-voltage fixtures already come with transformers, but if you need to select a transformer, there are a few things you should know. First, there are two basic types of transformers: magnetic and electronic.

Magnetic transformers consist of wires wrapped around an iron core and are relatively big and heavy — for example, a 300-watt transformer could be 6 inches by 6 inches. They generate more heat than electronic transformers, and in some cases, they produce a noticeable hum. So why use them? Well, they do come in many sizes, and if you have a long low-voltage run, you might need the extra capacity they offer. Also, if you plan to dim your lighting, the magnetic dimmers are less expensive than the electronic ones.

Electronic transformers are made with mysterious electronic parts and are much smaller and lighter than the magnetic variety. If you're tight on space, these are a good choice. Just keep in mind that if you want to dim them, you might have to pay more than fifty dollars for a suitable dimmer.

Narrowing the Choices

First, I would try to match the undercabinet lighting to the ambient lighting in the kitchen. If, for example, you have recessed fixtures with incandescent lamps, I would go with one of the low-voltage strip fixtures with incandescent lamps. If your ambient lighting is halogen, I would go with halogen or xenon lamps. Tapes and strips provide better coverage, but the bars are less expensive and they don't require a separate transformer. If dimming is important, stick with incandescent or halogen with magnetic transformers. Finally, for reliable, efficient, high-output task lighting, it's hard to go wrong with fluorescent. The fixtures are relatively inexpensive, and you can find a lamp that will provide color output similar to most types of ambient lighting.

***Bob Thornburg**, of Santa Fe, N.M., has over 20 years' experience as an electrician and lighting designer and is certified by the American Lighting Association as a Lighting Specialist.*